To: Mark Levin[mark.levin@minenv.com]
Cc: Allen Sorenson - DNR[allen.sorenson@state.co.us]; willbere@rvi.net[willbere@rvi.net]; Way, Steven[way.steven@epa.gov]; Gordon, Devin[DGordon@dowl.com]; Matt Francis[m.francis@erllc.com]; Robbie Lewis[Robbie.Lewis@gjrmx.com]
From: Petri, Elliott
Sent: Tue 8/25/2015 1:33:20 AM
Subject: RE: clarifications, concrete testing

Hi Mark and Allen,

I spoke with Allen this evening and will reach out to the testing firm with the questions outlined below, here are my responses to the questions you listed Mark:

1. If the concrete is self-consolidating then C1611 would be appropriate.

2. I will ask the testing firm if this can be added.

3. I will let the tester know that one set per truck is acceptable

4. I have requested that the tester bring cylinder identifiers since there will be two firms.

5. I will ask them to be well prepared!

Thanks,

Elliott

Elliott Petri, PE

Weston Solutions, Inc.

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From: Mark Levin [mailto:mark.levin@minenv.com]
Sent: Monday, August 24, 2015 1:37 PM
To: Petri, Elliott <Elliott.Petri@WestonSolutions.com>
Cc: Allen Sorenson - DNR <allen.sorenson@state.co.us>; willbere@rvi.net; Way, Steven <way.steven@epa.gov>; Gordon, Devin <DGordon@dowl.com>; Matt Francis <m.francis@erllc.com>; Robbie Lewis <Robbie.Lewis@gjrmx.com>
Subject: FW: clarifications, concrete testing

Hi Elliott:

I just got off the phone with Allen Sorenson – he is driving in from the Front Range.

He asked that I forward this to you and also discuss the answers he gave me on the phone, to be sure we're on the same page.

1) As far as field method, he agrees that C1611 is appropriate. Do you concur?

2) He has asked me to get cost on dimensional testing, but agreed that it probably is a good idea to know the shrinkage characteristics of this particular mix.

3) He is OK with testing by the truckload batch, as long as there are no significant mix or water content changes made within a truck load onsite. This means 3 cylinders from DOWL and 3 from Trautner, minimum, per truckload. The 5 CY threshold was based on the through that short trucks would be run.

4) Please look at item #4. We need to be sure we don't have confusion between samples. Any ideas?

5) Allen also asked that both testing companies bring lots of extra cylinders, just in case.

Mark Levin, P.E.

General Manager

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From: Mark Levin
Sent: Monday, August 24, 2015 11:36 AM
To: 'Allen Sorenson - DNR' <allen.sorenson@state.co.us>
Cc: 'willbere@rvi.net' <willbere@rvi.net>; 'Gordon, Devin' <DGordon@dowl.com>; 'Matt Francis' <m.francis@erllc.com>; 'Way, Steven' <way.steven@epa.gov>; 'Jones, Grant' <GJones@dowl.com>
Subject: clarifications, concrete testing

Hi Allen:

Several questions:

1) The specifications reference ASTM C143 for slump testing. (This appears to have been taken from the 2009 Everest data sheet for the mix we used at the Dinero – at that time that mix

was developed, I believe a "modified" C143 may have been in common usage for SCC). Note that a conventional C143 measures from steel cone to top of concrete after cone is lifted, and thus it would not measure the spread index and could not get numbers in the specified range, as they exceed the cone height.

I believe that now the correct slump testing method for an Self Consolidating Concrete (SCC) mix would normally be ASTM C1611, which is a spread test measurement on a flat surface, and observation of VSI (Visual Stability Index) to ensure that there is not excess bleed and aggregate separation. Please confirm. I have cc'd you on two other emails which have links to some more information about this.

2) Do you want any dimensional change testing performed? This was not specified but we recommend it be considered as an enhancement. If so, would measurement of dimension change on a marked specimen be acceptable, or do you want ASTM C490 measurement apparatus employed? (attached are several references on this).

3) The concrete testing specification references three cylinders per 5 CY. The truckloads will be about 7.5 CY and should be homogenous within each truckload, unless admixtures or water content, etc. are adjusted significantly in the field. Do you want multiple test sets per truck, based on an estimate of material pumped, or would one set of three samples per truck be acceptable, as long as no significant mix changes are made within that truck load?

4) We have DOWL from Montrose testing. I understand that Weston will have Trautner from Durango collecting parallel samples. We need to be sure both firms are getting the same information and also need to figure out how to store all the samples (possibly as many as 36) in the small area of the bulkhead and who will keep track of which samples belong to which testing group, and who will handle getting them out of the mine once the miners are gone.

I am in Montrose today and can be reached at 303-570-1207.

Thanks,

Mark Levin, P.E.

General Manager

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